the Société Alsacienne, reappeared in Yorkshire—then too late, some authorities think, to give the British manufacturer a chance in the short-combed French goods trade.

It is obvious that the author has not followed the interesting work of Prof. Ewart, of Edinburgh University, or he would not refer to the black-faced variety of sheep as being "as near to the original as any breed now existing." The University of Leeds about a year ago purchased a flock of Soay sheep simply to maintain them as a representative pure-bred flock of a type dating back to prehistoric times. The writer's statement that hair will not felt is obviously based on second-hand knowledge, which is not trustworthy; again, the idea that the serrations help to bind the fibres together has now been brought seriously into question. That worsteds will not felt was taught for years in our technical institutes, but thousands of pieces of worsted are now "milled" every day in the West Riding of Yorkshire alone.

There are men still living who have seen the sources of supply of fine wools change from Spain to Silesia and Saxony, and then from Silesia and Saxony to Australia; there are interesting evidences of the changes in the treatment here given to "The World's Wool Supply."

In dealing with "Preparation and Manufacture" the writer shows again a certain lack of grasp of fundamentals, as, for example, in explaining the difference between woollen and worsted, and in referring to healds and mails as "tiny loops of string." Again, on p. 125 it is stated that the needles in a Jacquard are acted on by holes, whereas they are acted on, *not* by holes, but by blanks. There is a serious error in printing the illustration of wool fibres facing p. 42. The block has evidently been turned round by the printers, with the result that the references are altogether misleading.

Having criticised the defects—which, all considered, are few—it is now the author's due that the excellences of the work should be emphasised. In many important respects the work is absolutely up to date. For example, the value of a suitable atmosphere in the spinning-room is interestingly treated. The harnessing of streams of water for power purposes is also referred to, although the author appears to be unaware of the method of electric control of water-power to attain that necessary steadiness in running otherwise unobtainable. As further illustrating the up-to-dateness of the work, reference will be found to the formation of the Agricultural Organisation Society for dealing with British wools on lines similar to those upon which Colonial wools are dealt with; to the use of a woven paper cloth for wool packing; to the development of the "automatic doffer" in the worsted spinning industry; and to the possibilities of the automatic loom in which weaving is done in the dark, any defect in the mechanism at once lighting up the loom, thus indicating the need for attention.

The psychology of the consuming public comes in for indirect attention, and the references to the trade guilds—which appear to be somewhat remarkably resuscitated in our present-day trade combines and trusts—and other matters of historical importance all tend to make the work very interesting as well as directly useful. Upon the whole, the work may be regarded as being among the best of the shorter general guides to the wool trade and the wool-manufacturing industries; its faults are few, and its excellences many.

OUR BOOKSHELF.

Winter Botany. A Companion Volume to the Author's "Plant Materials of Decorative Gardening." By Prof. W. Trelease. Pp. xxxii + 394. (Urbana: Published by the Author, 1918.) Price 2.50 dollars.

IN this handy and concise little volume Prof. Trelease describes the winter characters of 326 genera of trees and shrubs belonging to ninety-three families. With the exception of Larix and Taxodium, the Conifers are excluded, as these, being evergreen, have been adequately treated in the companion volume on "Plant Materials" issued in 1917. The book, though of American origin, includes most of the genera and species which the student is likely to find, wild or in cultivation, in this country, and should prove a useful handbook to the botanist who is interested in the determination of woody plants during the winter season. The generic description is in each case supplemented by a wood-cut illustrating the chief points to be observed, and by a brief key to the species which are likely to be found.

The descriptive matter is preceded by a key to the genera, and instructions are given as to its use. A good pocket-lens is essential to the examination of the characters of the twigs which is required for the use of the key. These characters include the position of the leaves, as indicated by the scars, the form of the scar, the position, number, and form of the buds and stipules (if present), the surface characters of the twigs, the form of the pith, and other easily observed internal characters. As heath-like and some other evergreen plants are included, the form and arrangement of the persistent leaves are considered in these cases. References are also given under the genus to descriptive works in which the winter characters of the plants in question are more fully treated. A useful glossary and a full index of Latin and popular names complete the volume.

The Illinois and Michigan Canal: A Study in Economic History. By Prof. J. W. Putnam. (Chicago Historical Society's Collection, vol. x.) Pp. xiii + 213. (Chicago: The University of Chicago Press, 1918.) Price 2 dollars.

THIS book was originally prepared as a doctoral dissertation of the University of Wisconsin. It is a mine of facts and a concrete illustration of the thesis that canals were a success when there were no railways, but are not a success when faced with the competition of modern railway transport. At the same time the success of this canal was an

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early indication that in the opening up of new lands the provision of adequate means of transport must precede the advent of the settler.

A connecting link between the Great Lakes and the Mississippi was necessary. An ancient outlet of Lake Michigan led to the Illinois River, which reaches the Mississippi near St. Louis, and so the State authorities, after overcoming many financial difficulties, eventually made the canal, which was opened in 1848.

Prof. Putnam details these early struggles, blames the "spoils system" for inefficient management and the consequent failure of the canal in later years, and pleads for the construction along the canal route of a waterway suitable for such ocean-going steamers as can at present reach Chicago and St. Louis. Both these cities have progressed in no small degree because they are terminals of the Illinois and Michigan navigation. Chicago in 1831 was a village; from 1848 to 1854 the population of the city rose from 20,035 to 74,500, and in 1870 it contained more than 300,000 inhabitants.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Some Temperature Anomalies.

THE investigations conducted by Hann and others have yielded a complete explanation of the physical processes involved in the production of the Föhn, Chinook, and similar winds met with in various parts of the world—a warm, moist air current depositing its moisture and decreasing in temperature while ascending the windward slope of a mountain range, then on the lee side descending and becoming intensely dry and increasing greatly in temperature as a consequence of the increase of pressure during the descent. But in the British Isles, and no doubt in other regions similarly situated in the neighbourhood of a relatively warm ocean current, there are occasions—and they are by no means uncommon—when a mild, soft sea breeze produces some curious temperature anomalies, which, so far as I am aware, have not attracted the attention of meteorologists and physicists, and, consequently, are thus far without any adequate explanation. They visit this country and western Europe in all seasons, but they are more noticeable in the winter half of the year, because the change of temperature is then relatively much greater than in the normally warm seasons.

Although the feature is observed only with the wind from points between west and south, and perhaps most frequently from about W.S.W., it is far from being an invariable accompaniment of an air current from this direction. On theoretical grounds, and from our conception of the natural order of things, we expect a rise of temperature over this country with a wind coming from the warm region of the Azores and the Lower Atlantic—the increase greatest in the west, nearest the seat of the source of the warmth, then becoming less and less marked during the eastward translation of the air current across the land, so that the bracing east coast of Britain would still be markedly cooler than the west coast of Ireland. The remarkable fact, however, is that actually the exact contrary is the case, the arrival of the warm current producing an increase of temperature on the western coasts, but the increase becoming more and more decided over the cold land, until the temperature in the extreme east is considerably higher than it is on the western seaboard.

There is in the Meteorological Office publications—the Daily, Weekly, and Monthly Reports for many years past—an *embarras de richesses* of illustrations of this particular feature. An excellent example is afforded by our experience during February 23 of the past year. On the morning of that day we were placed between an anticyclone centred over the Bay of Biscay and low pressure extending across from Iceland to Norway, with the wind at W.S.W. from Shetland southward, and the air temperature already well in excess of the normal in all districts. Over the country generally the thermometer had remained as high as 45° to 51° through the preceding night. During the day, however, the rise of temperature was very slight in the west, while it increased decidedly with the eastward advance of the wind. In the accompanying map the afternoon maximum temperatures are seen to be below 50° along the shores of the Bristol and St. George's Channels, and 50° to 53° on the outer western coasts from the Hebrides down to Scilly. Over eastern Britain, on the other hand, the maxima were 58° and upwards, 60° being reached at Crathes and Geldeston, and 61° at Aberdeen and Halstead. These were about the same as the maxima registered at the Azores on previous days. Even in eastern Ireland 56° were registered in Down, and 58° in Waterford. The day's range of temperature was less than 5° in the west generally, 0° to 3° in several localities, but eastward it increased to more than 10° over the greater part of Scotland and in eastern England, and as much as 15° to 18° in the east of Scotland.

The day was marked by a little rain locally, the general weather being fair to cloudy or overcast, with little or no sunshine over a wide area, and where there was sunshine the temperature was not materially different from what it was in sunless localities. Banff had the best sunshine record, eight hours, with temperature 59°, Cambridge registering the same maximum with one and a half hours of sunshine, and Westminster without a ray of sunshine. There was some sea fog between Pembroke and the Channel Islands to account for the lower temperature records in that region.

This particular instance can be accepted as typical of what takes place on these occasions, but I must refer to one other case, because it is the most extraordinary within my long experience. There were many such during the abnormally stormy conditions which prevailed over the Atlantic in the winter of 1898–99 (see charts illustrating the weather of this period, Meteorological Office, Official No. 142). On February 10, 1899, when the greatest winter cold on record was being experienced in America, the temperature ranging down to −60° in Ontario and −61° in Montana, a south to south-west breeze brought to a great part of Europe unprecedented winter warmth. At Cahirciveen Observatory, on the Kerry coast, the thermometer mounted on that day to 54°. Thence eastward over a distance of at least 700 miles the following maxima were recorded:—56° at Scilly, 57° at Brest and Clifton, 61° at Jersey, 62° at Oxford, 66° in London, 69° at Paris, and 70½° at Liége and Verviers. Still further to the east, another 300 miles, and Berlin and Munich rose to 59°, the whole of central and southern Europe and as far east as the Caucasus experiencing a marked increase of temperature, but

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